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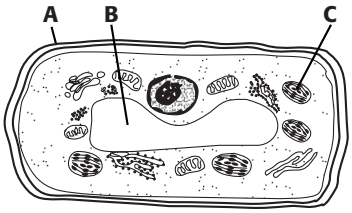
Name _____ Class _____ Date _____

Skills Worksheet

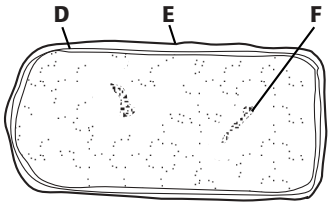
# Science Skills

## INTERPRETING DIAGRAMS

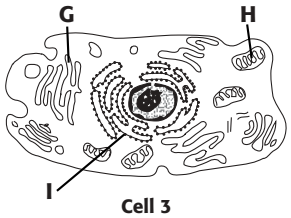
Biology students were working on a class project. They prepared copies of transmission electron micrographs of a bacterium, a plant cell, and an animal cell for display in their classroom. Unfortunately, the pictures were not labeled and got mixed up. Help these students correctly identify the cells and cell structures. Use the figures below to answer questions 1–5.



Cell 1



Cell 2



Cell 3

**In the space provided, write the names of each cell's labeled structures (A–I). Using this information, write the identity of each cell—bacterium, plant cell, or animal cell.**

**1.** Cell 1 identity _____

**A.** _____

**B.** _____

**C.** _____

**2.** Cell 2 identity _____

**D.** _____

**E.** _____

**F.** _____

**3.** Cell 3 identity _____

**G.** _____

**H.** _____

**I.** _____

Name _____ Class _____ Date _____

## Science Skills *continued*

**Read each question, and write your answer in the space provided.**

**4.** Are these cells prokaryotic or eukaryotic?

**5.** What are the primary differences between the three cells? What characteristics do they share?

5. Kilo-
6. 1,000 m
7. Centi-
8. 0.01 m
9. Milli-
10. 0.001
11. Micro-
12. 0.000001
13. c

### SECTION: CELL FEATURES

1. The middle part of the membrane protein is attracted to the interior of the lipid bilayer but is repelled by the water on either side of the lipid bilayer.
2. The inner and outer parts of the membrane protein are mostly polar.
3. the dual attraction of the inner and outer parts of the protein to water
4. Cause: Phospholipids are fluid and in motion. Effect: Cell-membrane proteins move within the lipid bilayer.
5. that there are different types of proteins in the cell membrane
6. marker proteins
7. help other cells recognize their cell type
8. receptor proteins
9. recognize and bind to specific substances outside the cell
10. transport proteins
11. aid the movement of substances into and out of the cell
12. d

### SECTION: CELL ORGANELLES

1. The vesicles move from the ER through the cytosol to the Golgi apparatus.
2. a set of flattened, membrane-bound sacs that serve as the packaging and distribution center of the cell
3. from buds on the surface of the Golgi apparatus
4. small, spherical organelles that contain a cell's digestive enzymes
5. b

## Vocabulary Review

1. LIGHT MICROSCOPE
2. ELECTRON MICROSCOPE
3. MAGNIFICATION
4. RESOLUTION
5. SCANNING TUNNELING MICROSCOPE
6. CELL THEORY
7. CELL MEMBRANE
8. RIBOSOME
9. PROKARYOTE
10. FLAGELLA
11. ORGANELLE
12. CILIA
13. EUKARYOTE
14. NUCLEUS
15. CYTOPLASM
16. CYTOSKELETON
17. PHOSPHOLIPID
18. LIPID BILAYER
19. endoplasmic reticulum
20. vesicle
21. Golgi apparatus
22. lysosomes
23. mitochondria
24. chloroplasts
25. central vacuole
26. cell wall

## Science Skills

### INTERPRETING DIAGRAMS

1. Cell 1—plant cell
   - **A.** cell wall
   - **B.** central vacuole
   - **C.** chloroplast
2. Cell 2—bacterium
   - **D.** cell membrane
   - **E.** cell wall
   - **F.** DNA
3. Cell 3—animal cell
   - **G.** smooth ER
   - **H.** mitochondrion
   - **I.** rough ER
4. The bacterium is a prokaryotic cell. The plant cell and the animal cell are eukaryotic cells.
5. One difference is that the bacterium, a prokaryote, does not have a nucleus or other organelles that carry out specific functions. The plant cell and the animal cell, which are both eukaryotic cells, do contain organelles. Such

organization allows eukaryotic cells to function in more-complex ways than prokaryotic cells. A plant cell differs from an animal cell in that the plant cell has a cell wall, a central vacuole, and chloroplasts. All three cells share many characteristics. The cells have a cell membrane and cytoplasm, and they all have the ability to reproduce. The cells also contain genetic material.

## Concept Mapping

1. prokaryotes
2. eukaryotes
3. cell membrane
4. animal cells
5. plant cells
6. cytoplasm
7. ribosomes
8. flagella
9. cilia
10. cell wall
11. chloroplasts
12. central vacuole

## Critical Thinking

1. c
2. a
3. e
4. d
5. b
6. b
7. e
8. d
9. a
10. c
11. c
12. f
13. e
14. d
15. b
16. a
17. g, b
18. e, h
19. c, d
20. a, f
21. b
22. d
23. c

## Test Prep Pretest

1. a
2. b
3. b
4. c
5. d
6. d
7. cell membrane
8. cell wall
9. transport proteins
10. central vacuole
11. pores
12. lysosomes
13. polar, nonpolar
14. organelles
15. 500
16. DNA
17. cell membrane
18. Golgi apparatus
19. cell wall
20. central vacuole
21. endoplasmic reticulum
22. mitochondrion
23. chloroplast
24. All living things are made of one or more cells. In organisms, cells are the basic units of structure and function. Cells arise only from existing cells.
25. Prokaryotes are small, single-celled organisms that lack internal, membrane-bound compartments. In prokaryotes, the genetic material is a single, circular molecule of DNA. Eukaryotes may be single-celled or multicellular. They have a nucleus, which is a membrane-bound compartment that houses the cell's DNA, and other organelles that carry out specific functions.

## Quiz

### SECTION: LOOKING AT CELLS

1. b
2. f
3. a
4. e
5. d
6. c
7. a
8. c
9. c
10. d

### SECTION: CELL FEATURES

1. a
2. c
3. f
4. b
5. e
6. d
7. b
8. c
9. a
10. d

### SECTION: CELL ORGANELLES

1. g
2. f
3. b
4. c
5. d
6. a
7. e
8. c
9. d
10. b